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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,855	06/28/2001	Tomio Inoue	CS-24-010628.2	3131

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EXAMINER	
LEE, SHUN K	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 10/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/892,855	INOUE ET AL.	
	Examiner	Art Unit	
	Shun Lee	2878	

-- The MAILING DATE of this communication appears on th cover sheet with th correspondence addr ss --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2001 & 02 August 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *0601* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 28 June 2001 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the date of publication supplied must include at least the month and year of publication, except that the year of publication (without the month) will be accepted if the year of publication is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the particular month of the publication is not in issue. It has been placed in the application file, but some of the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Specification

2. The disclosure is objected to because of the following informalities:

(a) on pg. 7, "LuSiO5:Ce(LSO)" in line 3 should probably be --$LuSiO_5$:Ce (LSO)--;

(b) on pg. 7, "(Lu1-xGdx)SiO5:Ce(LGSO)" in line 4 should probably be --$(Lu_{1-x}Gd_x)SiO_5$:Ce (LGSO)--; and

(c) on pg. 7, "YAlO3" in line 4 should probably be --$YAlO_3$--.

Appropriate correction is required.

Claim Objections

3. Claim 10 is objected to because of the following informalities:

(a) in claim 10, "LuSiO5:Ce(LSO)" on line 5 should probably be --$LuSiO_5$:Ce (LSO)--;

(b) in claim 10, "(Lu1-xGdx)SiO5:Ce(LGSO)" on line 6 should probably be

--$(Lu_{1-x}Gd_x)SiO_5$:Ce (LGSO)--; and

(c) in claim 10, "YAlO3" on line 6 should probably be --$YAlO_3$--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 14 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification discloses (pg. 12, line 27 to pg. 13, line 6) that "If the length of the period of the periodic array of the apertures 38 is represented by L, then point radiation sources spaced by a distance V=L·(D+Z)/Z at the distance Z product exactly the same projected images. Consequently, the observation range for the detection plane 48 (48") in the examinee 14 must be located within the distance V". Thus, the specification discloses periodic array of the apertures 38 which determines an observation range. However, claim 14 recites the limitation "said detecting means comprises means for detecting at most a range L·(D+Z)/D in the examinee where L represents the length of one period of said apertures, Z the distance from said

collimator to the observation position in said examinee, and D the distance from said collimator to said detecting means" which was not described in the specification.

6. Claim 14 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. As discussed above, detecting means comprising means for detecting at most a range L·(D+Z)/D in the examinee was not described in the specification and thus fails to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-4, 6, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gourlay (US 4,435,838) in view of Barrett *et al.* (US 6,392,235).

In regard to claim **1**, Gourlay discloses (Fig. 1) a gamma camera apparatus comprising:

(a) detecting means (10) for detecting gamma rays emitted from an examinee (object 14 such as a patient; column 6, lines 53-56);

(b) an encoding aperture plate (11) disposed between the examinee (14) and said detecting means (10);

(c) adjusting means (not illustrated but described in lines 46-65 of column 3) for adjusting the distance (D-d) from said detecting means (10) to said encoding aperture plate (11) to adjust the position (see arrow 13) of said encoding aperture plate (11) depending on the depth (column 2, lines 3-22) of an observation position (17) in the examinee (14);

(e) processing means or image reconstructing means (15, 18) for reconstructing an image based on the gamma rays detected by said detecting means (10) through said encoding aperture plate (11); and

(f) image display means (19) for displaying the reconstructed image.

While Gourlay also discloses (column 1, lines 8-11) that the apparatus is particularly applicable to medical imaging systems using gamma rays, the apparatus of Gourlay lacks an explicit description that the gamma rays are emitted from a radioisotope

administered to the examinee in order to construct a three-dimensional image representing a distribution of the radioisotope in the examinee. However, medical imaging systems using gamma rays are well known in the art. For example, Barrett *et al.* teach (column 1, line 25 to column 3, line 60) that known medical imaging systems use gamma rays emitted from a radioisotope administered to the examinee in order to construct a three-dimensional image (*i.e.*, spatial mapping) representing a distribution of the radioisotope in the examinee. Therefore it would have been obvious to one having ordinary skill in the art to perform a known medical (*e.g.*, emission) imaging using the apparatus of Gourlay, in order to obtain a radioisotope spatial distribution map reconstructed from the detected gamma rays emitted from a radioisotope administered to the examinee.

In regard to claim **2** which is dependent on claim 1, while Gourlay also discloses (column 4, lines 42-65; column 4, lines 38-68) that said adjusting means comprises means for adjusting an enlargement ratio α of said encoding aperture plate with respect to said detecting means, the apparatus of Gourlay lacks an explicit description that the enlargement ratio as viewed from said observation position is in a range from 1.5 to 3.5. However, Gourlay further discloses (column 5, lines 1-22) that magnification should be chosen based on detector resolution. Therefore it would have been obvious to one having ordinary skill in the art to select an enlargement ratio (*e.g.*, 1.5 to 3.5 as viewed from the observation position) for the apparatus of Gourlay based on the available detector resolution.

In regard to claims **3** and **4** which are dependent on claim 1, while Gourlay also discloses (column 1, lines 8-11) that the apparatus is particular applicable to medical imaging systems using gamma rays and (column 3, line 66 to column 4, line 10) that the detector (10) is for example an Anger camera which is typically a NaI crystal, the apparatus of Gourlay lacks that the detecting means comprises a plurality of semiconductor detecting elements made of CdTe or CdZnTe. However, medical imaging systems are well known in the art. For example, Barrett *et al.* teach (column 1, line 25 to column 3, line 60) that known medical imaging systems use scintillation cameras or semiconductor gamma ray cameras comprising of cadmium zinc telluride (*i.e.*, CdZnTe) which provide higher resolution than scintillation cameras. Therefore it would have been obvious to one having ordinary skill in the art to provide CdZnTe semiconductor detecting elements as the detecting means in the apparatus of Gourlay, in order to obtain high resolution.

In regard to claim **6** which is dependent on claim 1, Gourlay also discloses (column 5, lines 1-22) that said detecting means comprises a two-dimensional array of detecting elements.

In regard to claim **12** which is dependent on claim 1, Gourlay also discloses (column 5, lines 1-22) that said encoding aperture plate comprises a collimator having a two-dimensional array of apertures defined according to a rule of an M array.

In regard to claim **13** which is dependent on claim 1, Gourlay also discloses (column 5, lines 1-22) that said encoding aperture plate comprises an M-array collimator

having a two-dimensional array of apertures over at least one period (*i.e.*, spatial periodicity).

10. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gourlay (US 4,435,838) in view of Barrett *et al.* (US 6,392,235) as applied to claim 1 above, and further in view of Kiri (US 4,891,844).

In regard to claims **5** and **11** which are dependent on claim 1, the modified apparatus of Gourlay lacks that said detecting means comprises a one-dimensional array of detecting elements and that said encoding aperture plate comprises a collimator having a one-dimensional array of apertures. Kiri teaches (column 1, lines 9-39) that a conventional measure to reduce expense is to replace a 2-D sensor with a scanning 1-D sensor. Therefore it would have been obvious to one having ordinary skill in the art to reduce the two-dimensional aperture array and detecting array to an one-dimensional aperture array and detecting array in the modified apparatus of Gourlay, in order to reduce expense.

11. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gourlay (US 4,435,838) in view of Barrett *et al.* (US 6,392,235) as applied to claim 1 above, and further in view of Worstell (US 5,600,144).

In regard to claims **7-10** which are dependent on claim 1, while Gourlay also discloses (column 1, lines 8-11) that the apparatus is particular applicable to medical imaging systems using gamma rays and (column 3, line 66 to column 4, line 10) that the detector (10) is for example an Anger camera which is typically a NaI crystal, the modified apparatus of Gourlay lacks an explicit description that the detecting means

comprises a scintillator made of NaI:Tl for converting the wavelength of gamma rays, and a position-sensitive photomultiplier interconnected by an optical fiber or a plurality of photodiodes for detecting light obtained by said scintillator. However, medical imaging system detecting means are well known in the art. For example, Worstell teaches (column 7, lines 18-40; column 10, lines 17-27) that medical imaging system detecting means comprises of a scintillator made of a material such as NaI:Tl or LSO (Table 1) for converting the wavelength of gamma rays, and a position-sensitive photomultiplier (PS-PMT) interconnected by an optical fiber or equivalently a plurality of photodiodes for detecting light obtained by said scintillator. Therefore it would have been obvious to one having ordinary skill in the art to provide as the detecting means in the modified apparatus of Gourlay a known detecting means such as a PS-PMT interconnected by an optical fiber or equivalently photodiodes for detecting light from a NaI:Tl scintillator.

12. Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gourlay (US 4,435,838) in view of Barrett *et al.* (US 6,392,235) as applied to claim 1 above, and further in view of Pelizzari *et al.* (US 4,977,505) and Liebig *et al.* (US 5,672,877).

In regard to claims **15-20**, Gourlay in view of Barrett *et al.* is applied as in claim 1 above. The modified apparatus of Gourlay lacks an image supply means comprising a computerized tomography diagnostic device, a nuclear medicine diagnostic device, a magnetic resonance diagnostic device, or a digital camera device for supplying an image to be used in superposed relation to said reconstructed three-dimensional image.

Coregistration of medical images are well known in the art. For example, Pelizzari *et al.* teach (column 1, line 15 to column 2, line 59) that accurately correlated information from different imaging modalities is frequently needed. As another example, Liebig *et al.* teach (column 1, line 13 to column 2, line 38) that physicians may wish to view superimposed images from different imaging modalities. Therefore it would have been obvious to one having ordinary skill in the art to provide an image supply means in the modified apparatus of Gourlay, in order to coregister of medical images from different imaging modalities.

Double Patenting

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 1, 3-5, 11, 15, 16, and 20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 7-9, and 11 of copending Application No. 10/265,412 (2003/0150996). Although the conflicting claims are not identical, they are not patentably distinct from

each other because a digital camera device would be an obvious variation of a photographing unit.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703) 308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SL
September 30, 2003

DAVID PORTA
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